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EXAMINER

NGUYEN, TANH Q

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/685,136	Applicant(s) ROWLANDS, JOSEPH B.	
	Examiner TANH Q. NGUYEN	Art Unit 2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,7,10,12,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,7,10,12,15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Each of claims 1, 10 recites “wherein the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules” in the last 2 lines of the respective claims. It is not clear where “a set of predetermined ordering rules” is disclosed in the specification.

Original claims 9 and 18 disclose the set of predetermined ordering rules comprising: non-posted requests cannot bypass posted requests; responses cannot bypass posted requests; and posted requests cannot bypass posted requests.

Claims 9 and 18 were rejected as being indefinite because it is not clear what “posted requests cannot bypass posted requests” means. Since claims 9 and 18 are indefinite, the limitation “the set of predetermined rules” is also indefinite. Claims 9 and 18 were cancelled by applicant following the rejection.

Applicant is required to make appropriate amendment to the specification to provide clear support or antecedent basis for “a set of predetermined ordering rules” **providing that no new matter is introduced.**

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

Art Unit: 2182

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1, 3, 6, 7, 10, 12, 15, 16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for “the remote access by said bridge to perform said data write”, does not reasonably provide enablement for “the remote access by said bridge to perform said data write being performed in accordance with a set of predetermined ordering rules” - as recited in the last 2 lines of each of claims 1, 10. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. There is no disclosure in the specification for “the set of predetermined ordering rules” except in original claims 9 and 18, and claims 9, 18 are indefinite (see objection to the specification in paragraph 1 above).

5. Claims 1, 3, 6, 7, 10, 12, 15, 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite because the limitation “the set of predetermined rules” is indefinite (see the objection to the specification above), therefore not setting forth the metes and bounds of the claims.

6. The rejections that follow are based on the examiner’s best interpretation of the claims.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 3, 6, 7, 10, 12, 15, 16 are rejected under 35 U.S.C. 102(a) and 35 U.S.C. 102(e) as being anticipated by Sano et al. (US 2003/0105828).

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

9. As per claim 1, Sano teaches a system for managing data in multiple data processing devices using common data paths [FIGs. 1-3], comprising:

a first data processing system [10B, FIG. 3] comprising a memory [24B - FIG. 3], wherein said memory comprises a cacheable coherent memory space [paragraph

[0071]]; and

a second data processing system [10A, FIG. 3] communicatively coupled to said first data processing system, said second data processing system comprising at least one bridge [32 of system 10A, FIG. 3], wherein said bridge is operable to perform an uncacheable remote access to said cacheable memory space of said first data processing system [paragraph [0070] teaches noncoherent remote access, last 2 lines of paragraph [0164] teaches uncacheable transaction being treated as noncoherent transaction, and paragraph [0071] teaches noncoherent remote access to cacheable memory space of first data processing system, hence uncacheable remote access to cacheable memory space of first data processing system]; and

wherein said uncacheable (noncoherent) remote access performed by said bridge comprises writing data to said memory of the first data processing system for incorporation into the cacheable coherent memory space of the first data processing system [paragraph [0071]];

wherein said data written by said bridge during said uncacheable remote access participates in a cacheable coherent memory protocol [MESI protocol or MOESI protocol, paragraph [0042]] in said cacheable coherent memory space;

wherein said data written by the bridge during said uncacheable remote access is processed by said first data processing system to convert the data to conform to a cacheable coherent memory protocol in the cacheable memory space, and wherein the converted data in said cacheable coherent memory space is accessed by an agent [32B of system 10B] subsequent to said conversion [paragraphs [0070]-[0071]];

wherein the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules [0071]].

Note that Sano above teaches access to the cacheable coherent memory space ([0071] teaches “said remote access performed by said bridge comprising writing data to said memory of the first data processing system for incorporation into the cacheable coherent memory space of the first data processing system” recited in lines 9-11). Because writing data to a cacheable coherent memory space requires the data to be written in accordance with a set of predetermined ordering rules for cache coherency (cache coherency requires predetermined ordering; cache coherency is not be possible without predetermined ordering), it is necessary for the remote access by the bridge of Sano to perform said data write in accordance with a set of predetermined ordering rules in the first data processing system - to have the data written by the bridge incorporated in the cacheable coherent memory space of the first data processing system.

Note further that the claim requires “a set of predetermined ordering rules”, and nothing else. Since there is no specificity to the limitation of “a set of predetermined rules”, and since it is necessary for data to be written in the first data processing system of Sano in accordance with predetermined ordering rules to be incorporated in the cacheable coherent memory space of the first data processing system, the limitation “wherein the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules” is not sufficient to preclude Sano from teaching the invention.

10. As per claims 3, 6, 7, Sano teaches the uncacheable (noncoherent) remote access comprising reading data from the cacheable coherent memory space of the first data processing system [paragraph [0085], lines 4-7; paragraph [0086], lines 1-5; paragraph [0095]];

the bridge [32 of system 10A] producing the remote access [performing the remote uncacheable access], and the agent [32 of system 10B] consuming the access, hence a producer-consumer protocol;

data written by the bridge comprising a payload [a packet] and a flag [e.g. WrInv; paragraph [0164]], with the flag and the payload both residing in the first data processing system.

11. As per claims 10, 12, 15, 16, the claims generally correspond to claims 1, 3, 6, 7, and are rejected on the same bases.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-8, 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (US 6,470,429) in view of Anand (US 6,134,641).

14. As per claim 1, Jones teaches a system for managing data in multiple data processing devices using common data paths [90, FIG. 1], comprising:

a first data processing system [100-106, FIG. 1] comprising a memory [102, 106 - FIG. 1], wherein said memory comprises a cacheable coherent memory space [col. 1, lines 25-27]; and

a second data processing system [110, FIGs. 1-2] communicatively coupled to said first data processing system, said second data processing system comprising at least one bridge [210, FIG. 2], wherein said bridge is operable to perform an uncacheable remote access to uncacheable memory space of said first data processing system.

Jones further teaches the bridge being operable to perform a cacheable remote access to the cacheable coherent memory space of the first data processing system by bus snooping [col. 6, lines 56-59], and bus snooping impacting computer system performance [col. 2, lines 16-17].

Jones does not teach the bridge performing an uncacheable remote access to the cacheable coherent memory space of the first data processing system.

Anand teaches using uncacheable request to access a cache coherent memory space [col. 5, lines 40-45; col. 9, lines 9-12] in order to avoid bus snooping [col. 9, lines 6-7].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform an uncacheable remote access to a cacheable coherent memory space, as is taught by Anand, in order for Jones' system to maintain coherency while avoiding bus snooping which results in improved performance.

Jones/Anand above teaches access to the cacheable coherent memory space,

hence a data write to the cacheable coherent memory space.

Anand teaches the uncacheable access participating in cacheable coherent memory protocol [240, FIG. 2]; conversion of uncacheable address space into cacheable address space to allow an agent to access the cacheable coherent address space of a data processing system [240, FIG. 2].

Jones/Anand above teaches access to the cacheable coherent memory space, hence data being written in accordance with a set of predetermined ordering rules - to maintain coherency (**cache coherency requires predetermined ordering; cache coherency is not be possible without predetermined ordering**).

15. As per claims 3, 6, 7, Jones/Anand above teaches access to the cacheable coherent memory space, hence a data read from the cacheable coherent memory space;

Jones/Anand above teaches the bridge performing an uncacheable request, hence a producer and the agent receiving data (in a data read), hence a consumer, and therefore a producer-consumer protocol;

Jones/Anand above teaches access to the cacheable coherent memory space, hence data written by the bridge comprising a payload; Anand further teaches a flag for indicating an uncacheable request to a cacheable coherent memory space [col. 6, lines 28-31].

16. As per claims 10, 12, 15, 16, the claims generally correspond to claims 1, 3, 6, 7, and are rejected on the same bases.

Response to Arguments

17. Applicant's arguments filed October 18, 2007 have been reconsidered but they are either moot in view of the new ground of rejections and/or not persuasive.

18. Applicant argues with respect to Sano that the examiner has failed to identify "the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules". The argument is not persuasive because the examiner has identified paragraph [0071] as teaching "said uncacheable remote access performed by said bridge comprises writing data to said memory of the first data processing system for incorporation into the cacheable coherent memory space of the first data processing system" - hence teaching access to the cacheable coherent memory space, and because access to the cacheable coherent memory space requires a set of predetermined ordering rules (cache coherency is not be possible without predetermined ordering), and further because there is no specificity to the set or predetermine ordering rules - see rejection of claim 1 by Sano above.

To further clarify the examiner's position, the examiner has specifically identified paragraph [0071] as teaching the limitation "the remote access by said bridge to perform said data write is performed in accordance with a set of predetermined ordering rules", and specifically included an explanation as to why paragraph [0071] would teach such limitation rules - see rejection of claim 1 by Sano above.

19. Applicant argues that Anand does not teach "the use of an uncacheable request to access a cacheable coherent memory space" because the cited portion of Anand states that "the non-cacheable block of system memory" may be addressed without any

coherency problems. The argument is not persuasive because Anand teaches “the non-cacheable block of system memory may then be addressed...without any cache coherency problem” (col. 9, lines 9-12) and because Anand teaches “using uncacheable request to access a cache coherent memory space (col. 5, lines 40-45; col. 9, lines 9-12).

Conclusion

20. Applicant's amendment filed October 18, 2007 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on 571-272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tanh Q. Nguyen/
Primary Examiner, Art Unit 2182

TQN
March 12, 2008